(54) NAVIGATION DEVICE FOR VEHICLE
(11) 3-291584 (A) (43) 20.12.1991 (19) JP
(21) Appl. No. 2-95849 (22) 10.4.1990
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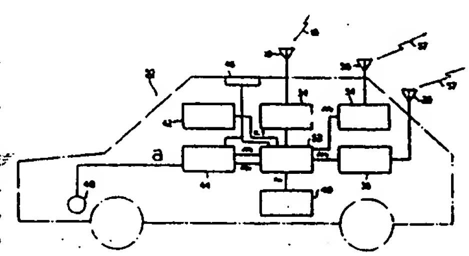
(51) Int. Cl[5]. G01S5/14,G01C21/00

Ref. 1

PURPOSE: To eliminate fixed stations and correct GPS position measurement data, and to improve the position measurement accuracy by correcting the GPS position measurement data with correction data found by the navigation device of the this vehicle or external correction data.

CONSTITUTION: A GPS reception part 34 finds the distance to a GPS satellite with a received satellite radio wave 16 and then finds the GPS position measurement data from the distance. Then a control part 52 compares the current travel position of this vehicle determined with the position measurement data with the position of the closest intersection on map data at a recording part, converts it into travel position coordinates X and Y, and displays them on a screen, and data ΔP_k is radiated 56 from a transmission part 54 with a mobile station radio wave 57. A reception part 36, on the other hand, receives another mobile station radio wave 57 through an antenna 26, and extracts and supplies correction data ΔP_k to a control part 52. The control part 52 when inputting the correction data ΔP_k does not calculate the correction data ΔP_k by the navigation device 50 of this vehicle, but finds the travel position coordinates with the input data ΔP_k and displays it.



36: reception part. 40: recording part. 42: display part. 44: estimation navigation part. 46: azimuth sensor. 48: distance sensor. 52: control part. 54: transmission part. a: travel distance

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Partial Translation of Reference

Jpn. Pat. Appln. KOKAI Publication No. 3-291584

Filing No.: 2-95849
Filing Date: April 10, 1990
Applicant: TOYOTA MOTOR CORPORATION
Priority: Not Claimed.
KOKAI Date: December 20, 1991
Request for Examination: Not filed.
Int.Cl.: G01S 5/14, G01C 21/00

A. Page 4, lower right column, line 8 to page 5, upper right column, line 6:

In a vehicle navigation apparatus 50 according to the present invention, a control unit 52 has a map matching function. A transmission unit 54 and an antenna 56 for transmitting correction data to a vehicle navigation apparatus mounted on the other vehicle are also provided.

A GPS reception unit 34 receives a satellite radio wave 16 by an antenna 18, and demodulates it to generate a satellite signal. The GPS reception unit 34 further executes the GPS operation in accordance with the satellite signal. The GPS operation is to obtain a distance from a GPS satellite 10 and obtain the GPS positioning data on the basis of this distance. The GPS positioning data is supplied from the GPS reception unit 34 to the control unit 52. The control unit 52 stores a current running position Pn of a vehicle 14 determined in accordance with the GPS positioning data that is input from the GPS reception unit

34, and refers to the position Pn, in the map data stored in a memory unit 40.

The memory unit 40 supplies a point of intersection Pm that is nearest to the position Pn to the control unit 52. The control unit 52 operates correction data ΔPk on the basis of

$$\Delta Pk = Pn - Pm$$

The correction data ΔPk is converted into coordinates X and Y of the running position of the vehicle 14. The converted data is displayed on a screen of a display unit 42 together with the map data.

On the other hand, the correction data ΔPk is supplied to the transmission unit 54. The transmission unit 54 transmits the correction data ΔPk from the antenna 56 by use of a mobile station radio wave 57. The mobile station radio wave 57 is received by, for example, the vehicle navigation apparatus mounted on the other vehicle. The reception unit 36 also receives the mobile station radio wave 57 with the antenna 26 and demodulates it. The reception unit 36 further extracts the correction data ΔPk from the demodulation results and supplies the data to the control unit 52. When the control unit 52 inputs the correction data ΔPk from the reception unit 36, the control unit 52 does not operate the correction data ΔPk on the basis of the GPS positioning data, but determines and displays the running position coordinates X and Y on